MX480 3D Universal Edge Router Quick Start

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This document describes how to install the Juniper Networks® MX480 3D Universal Edge Router.

Contents

MX480 Quick Start Description

This Quick Start contains information you need to install and configure the router quickly. For complete installation instructions, see the *MX480 3D Universal Edge Router Hardware Guide* at http://www.juniper.net/techpubs/.

> ⚠ **WARNING:** This Quick Start contains a summary of safety warnings in "Safety Warnings" on page 26. For a complete list of warnings for this router, including translations, see the *MX480 3D Universal Edge Router Hardware Guide* at http://www.juniper.net/techpubs/.

The MX480 3D Universal Edge Router is 8 rack units (U) tall. Five routers can be stacked in a single floor-to-ceiling rack, for increased port density per unit of floor space. The router provides eight slots that can be populated with up to six Dense Port Concentrators (DPCs) or Modular Port Concentrators (MPCs), three Flexible PIC Concentrators (FPCs), and two SCBs. Each FPC holds up to two PICs and each MPC holds up to two Modular Interface Cards (MICs).

Each Packet Forwarding Engine enables a throughput of 10 Gbps. Many types of DPCs are available. For a list of the DPCs supported, see the MX Series 3D Universal Edge Routers Line Card Guide.

The MX480 supports up to 3 FPCs containing up to 6 PICs or up to 6 MPCs containing up to 12 MICs. For a list of the supported line cards, see the *MX Series Interface Module Reference*.

The router is shipped in a cardboard box strapped securely to a wooden pallet. Plastic straps secure the top and bottom in place. The router chassis is bolted to this pallet. Quick Start installation instructions and a cardboard accessory box are also included in the shipping container.

Step 1: Prepare the Site for MX480 Installation

Rack-Mounting Requirements

- You can install the router in a four-post rack or cabinet or an open-frame rack.

- The rack rails must be spaced widely enough to accommodate the router chassis's external dimensions: 14.0 in. (35.6 cm) high, 24.5 in. (62.2 cm) deep, and 17.45 in. (44.3 cm) wide. The outer edges of the mounting brackets extend the width to 19 in. (48.3 cm).

- The rack must be strong enough to support the weight of the fully configured router, up to 163.5 lb (74.2 kg). If you stack five fully configured routers in one rack, it must be capable of supporting about 818 lb (371.0 kg).

- For service personnel to remove and install hardware components, there must be adequate space at the front and back of the router. Allow at least 30 in. (76.2 cm) in front of the router and 24 in. (61 cm) behind the router.

- The rack or cabinet must have an adequate supply of cooling air.

- Ensure that the cabinet allows the chassis hot exhaust air to exit from the cabinet without recirculating into the router.

- The router must be installed into a rack that is secured to the building structure.

- Mount the router at the bottom of the rack if it is the only unit in the rack.

- When mounting the router in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.

Figure 1: MX480 Rack Clearance and Router Dimensions
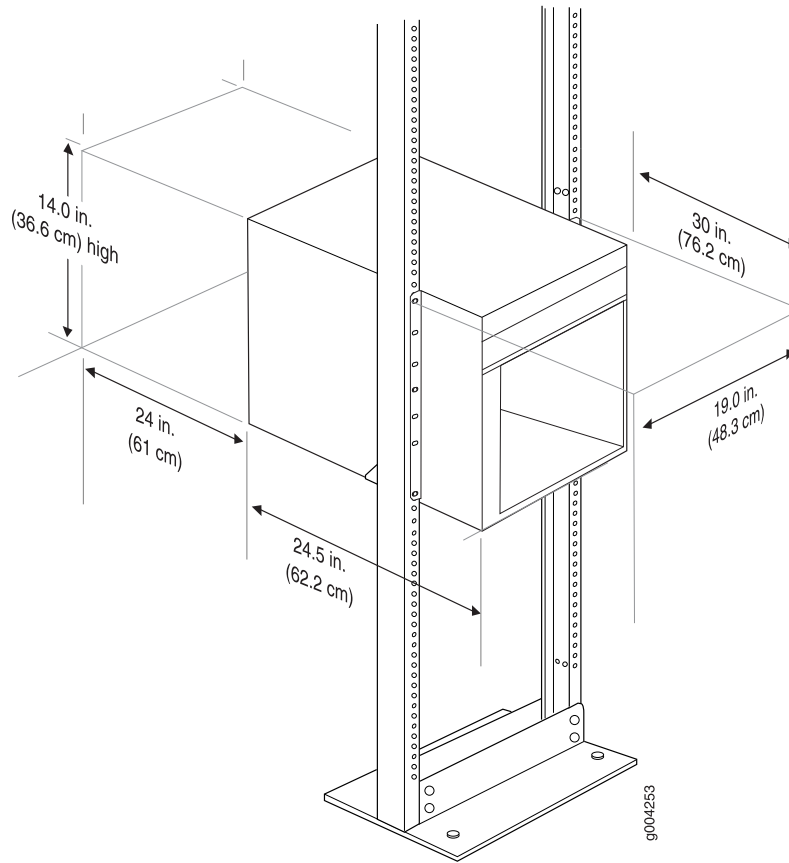
Tools Required to Unpack and Prepare the MX480 Router for Installation

To unpack the router and prepare for installation, you need the following tools:

- A mechanical lift—recommended

- Phillips (+) screwdrivers, numbers 1 and 2

- 2.5-mm flat-blade (−) screwdriver

- 7/16-in. (11 mm) torque-controlled driver or socket wrench

- 1/2-in. or 13-mm open-end or socket wrench to remove bracket bolts from the shipping pallet

- Electrostatic discharge wrist strap

- Antistatic mat

Step 2: Install the Mounting Hardware in a Four-Post Rack or Cabinet or an Open-Frame Rack

To install the mounting shelf on the front rails of a four-post rack or cabinet, or the rails of an open-frame rack:

1. If needed, install cage nuts in the holes specified in Table 1 on page 6.

2. On the back of each rack rail, partially insert a mounting screw into the lowest hole specified in Table 1 on page 6.

3. Install the mounting shelf on the back of the rack rails. Rest the bottom slot of each flange on a mounting screw.

4. Partially insert screws into the open holes in each flange of the mounting shelf (see Figure 2 on page 7 or Figure 3 on page 8).

5. Tighten all the screws completely.

Table 1: MX480 Mounting Hole Locations

Hole	Distance Above U Division		Mounting Shelf
4	2.00 in. (5.1 cm)	1.14 U	X
3	1.51 in. (3.8 cm)	0.86 U	X
2	0.88 in. (2.2 cm)	0.50 U	X
1	0.25 in. (0.6 cm)	0.14 U	X

Figure 2: MX480 Mounting Hardware for a Four-Post Rack or Cabinet
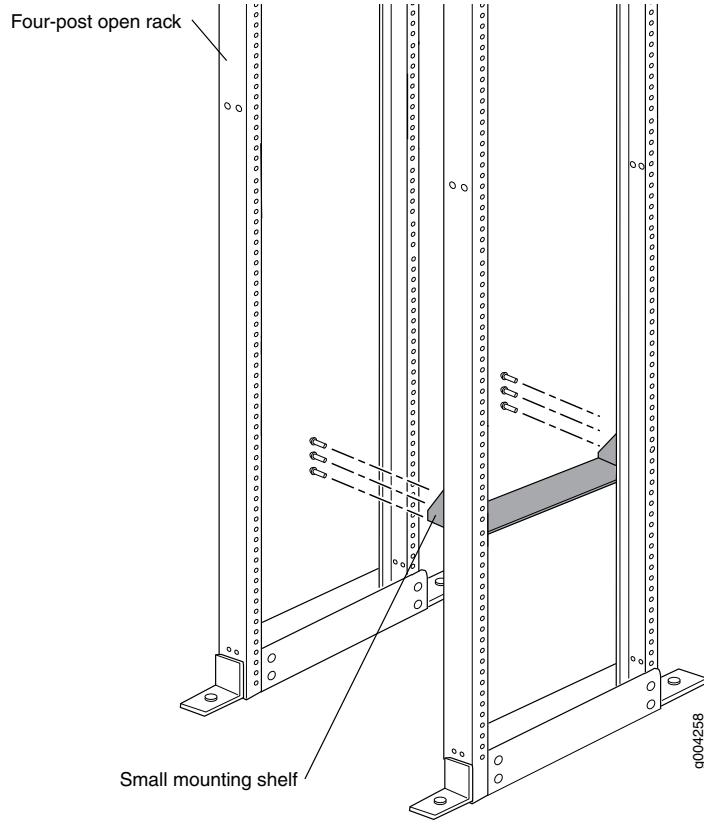
Figure 3: Mounting Hardware for an Open-Frame Rack

Open-frame rack

Small mounting shelf

g004255
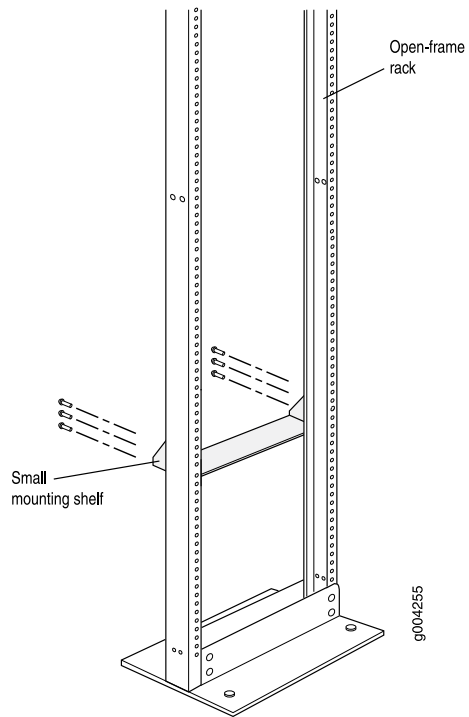
Step 3: Install the Router

Because of the router's size and weight, you must remove all components before installing the router. We also recommend that you install the router using a mechanical lift.

Remove Components

Figure 4: Components to Remove from the Front of the MX480 Router

Figure 5: Components to Remove from the Rear of the MX480 Router

Before lifting the router, you must remove the following components:

- Power supplies
- Switch Control Boards (SCBs)

- Routing Engines

- Air filter

- Fan tray

- Line cards:

  - Dense Port Concentrators (DPCs)

  - Flexible PIC Concentrators (FPCs)

  - Physical Interface Cards (PICs)

  - Modular Port Concentrators (MPCs)

  - Modular Interface Cards (MICs)

To remove the components from the router:

1. Slide each component out of the chassis evenly so that it does not become stuck or damaged.

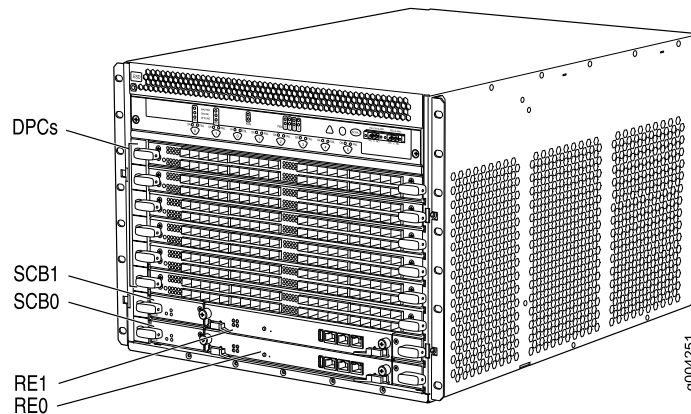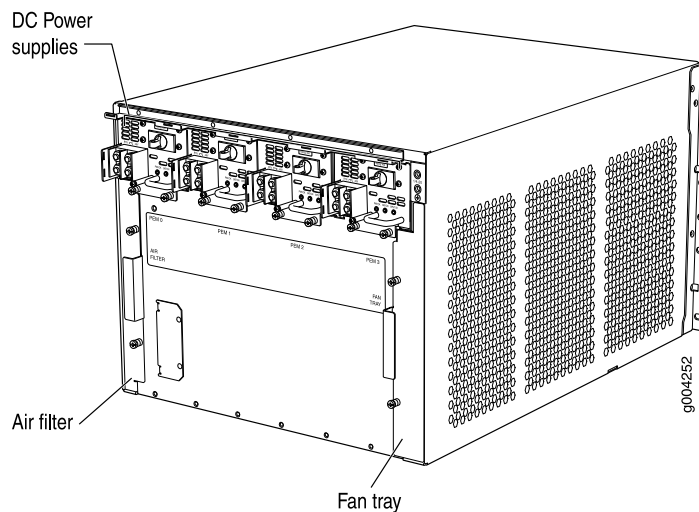2. Label each component as you remove it so you can reinstall it in the correct location.

3. Immediately store each removed component in an electrostatic bag.

4. Do not stack removed components. Lay each one on a flat surface.

NOTE: For complete instructions on removing router components, see "Installing the MX480 Chassis in the Rack Manually" in the *MX480 Router Hardware Guide*.

Install the Router Using a Lift

To install the router using a lift:

1. Ensure that the rack is in its permanent location and is secured to the building. Ensure that the installation site allows adequate clearance for both airflow and maintenance. For details, see the *MX480 3D Universal Edge Router Hardware Guide*.

2. Load the router onto the lift, making sure it rests securely on the lift platform (see Figure 6 on page 11).

Figure 6: Load the MX480 Router onto the Lift
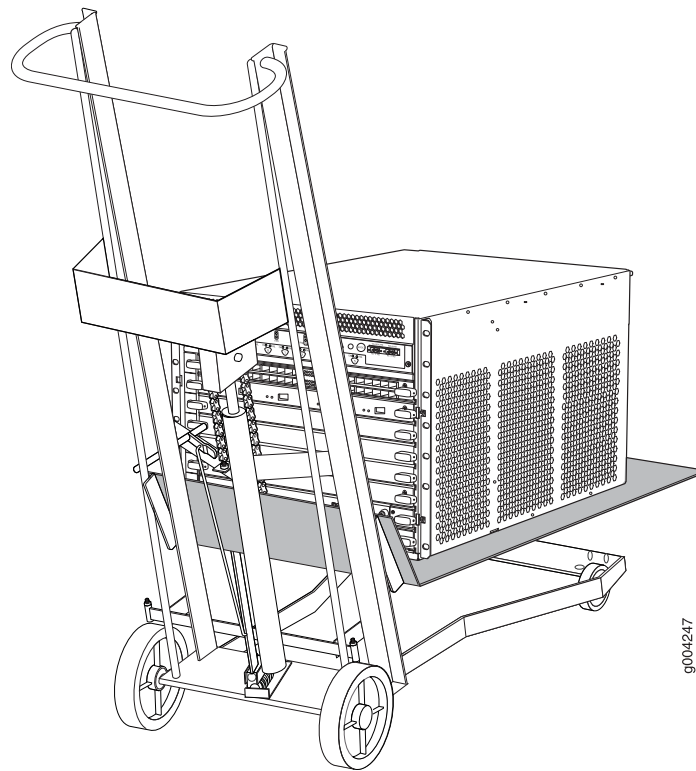
3. Using the lift, position the router in front of the rack or cabinet, centering it in front of the mounting shelf.

4. Lift the chassis approximately 0.75 in. above the surface of the mounting shelf, and position it as close as possible to the shelf.

5. Carefully slide the router onto the mounting shelf so that the bottom of the chassis and the mounting shelf overlap by approximately 2 inches.

6. Slide the router onto the mounting shelf until the mounting brackets contact the rack rails. The shelf ensures that the holes in the mounting brackets and the front-mounting flanges of the chassis align with the holes in the rack rails.

7. Move the lift away from the rack.

8. Install a mounting screw into each of the open mounting holes aligned with the rack, starting from the bottom.

9. Visually inspect the alignment of the router. If the router is installed properly in the rack, all the mounting screws on one side of the rack should be aligned with the mounting screws on the opposite side and the router should be level.

Install the Router Without a Mechanical Lift

Lifting the chassis and mounting it in a rack requires two people. The empty chassis weighs approximately 65.5 lb (29.7 kg).

1. Ensure that the rack is in its permanent location and is secured to the building.

2. Position the router in front of the rack or cabinet, centering it in front of the mounting shelf. Use a pallet jack if one is available.

3. With one person on each side, hold onto the bottom of the chassis and carefully lift it onto the small mounting shelf.

4. Slide the router onto the mounting shelf until the mounting brackets contact the rack rails. The shelf ensures that the holes in the mounting brackets and the front-mounting flanges of the chassis align with the holes in the rack rails.

5. To install the router in an open-frame rack, install a mounting screw into each of the open mounting holes aligned with the rack, starting from the bottom.

6. Visually inspect the alignment of the router. If the router is installed properly in the rack, all the mounting screws on one side of the rack should be aligned with the mounting screws on the opposite side and the router should be level.

Figure 7: Lift the MX480 Router into the Rack
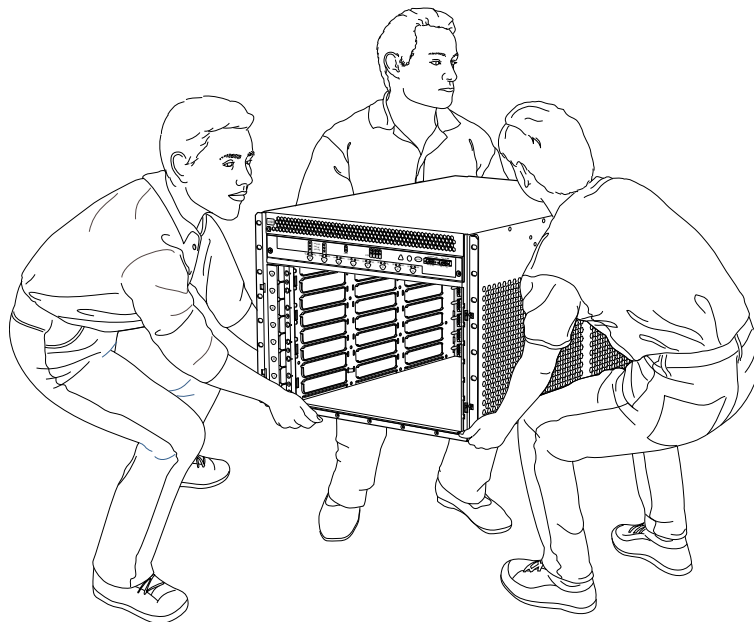
Reinstall Components

To reinstall the components in the router:

1. Slide each component into the chassis evenly so that it does not become stuck or damaged.

2. Tighten the captive screws for each component.

NOTE: Make sure that all empty slots are covered with a blank panel before operating the router.

Step 4: Connect the Grounding Cable

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to an approved site ESD grounding point. See the instructions for your site.

2. Connect the grounding cable to a proper earth ground.

3. Verify that a licensed electrician has attached the cable lug provided with the router to the grounding cable.

4. Make sure that grounding surfaces are clean and brought to a bright finish before grounding connections are made.

5. Attach an ESD grounding strap to your bare wrist and connect the strap to one of the ESD points on the chassis.

6. Place the grounding cable lug over the grounding points. The grounding point is sized for UNC 1/4-20 bolts.

7. Secure the grounding cable lug to the grounding points, first with the washers, then with the screws.

8. Verify that the grounding cabling is correct, that the grounding cable does not touch or block access to router components, and that it does not drape where people could trip on it.

Step 5: Connect External Devices and Line Card Cables

Figure 8: Connect External Devices and DPC Cables

Fiber-optic cable
connector

-
-
-
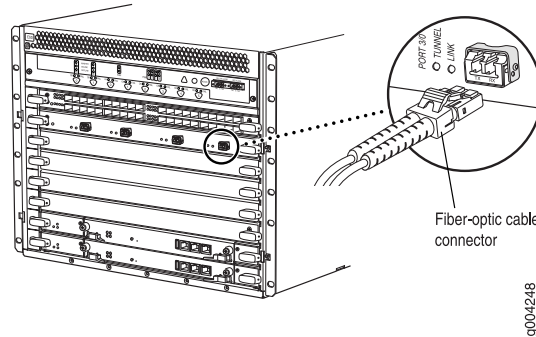
Connect to a Network for Out-of-Band Management

1. Turn off the power to the management device.

2. Plug one end of the RJ-45 Ethernet cable into the appropriate **ETHERNET** port on the Routing Engine.

3. Plug the other end of the cable into the network device.

Connect a Management Console

1. Turn off the power to the management device.

2. Plug RJ-45 end of the serial cable into the appropriate **CONSOLE** or **AUX** port on the Routing Engine.

3. Plug the female DB-9 end into the device's serial port.

Connect the Line Card Cables

1. Have ready a length of the type of cable used by the DPC, MPC, MIC, or PIC. For cable specifications, see the *MX Series Interface Module Reference*.

2. If the cable connector port is covered by a rubber safety plug, remove the plug.

> WARNING: Do not look directly into a fiber-optic transceiver or into the ends of fiber-optic cables. Fiber-optic transceivers and fiber-optic cable connected to a transceiver emit laser light that can damage your eyes.

⚠ CAUTION: Do not leave a fiber-optic transceiver uncovered except when you are inserting or removing cable. The safety cap keeps the port clean and prevents accidental exposure to laser light.

3. Insert the cable connector into the cable connector port on the faceplate.

4. Arrange the cable in the cable management system to prevent it from dislodging or developing stress points. Secure the cable so that it is not supporting its own weight as it hangs to the floor. Place excess cable out of the way in a neatly coiled loop in the cable management system. Placing fasteners on the loop helps to maintain its shape.

⚠ CAUTION: Avoid bending fiber-optic cable beyond its minimum bend radius. An arc smaller than a few inches in diameter can damage the cable and cause problems that are difficult to diagnose.

⚠ CAUTION: Do not let fiber-optic cable hang free from the connector. Do not allow fastened loops of cable to dangle, which stresses the cable at the fastening point.

Step 6: Connect Power Cables

Depending on your configuration, your router uses either normal-capacity or high-capacity AC or DC power supplies. Perform the appropriate procedures for each power supply in your router.

Connect Power to an AC Router with Normal-Capacity Power Supplies

1. Locate the power cords, which should have a plug appropriate for your geographical location (see the *MX480 3D Universal Edge Router Hardware Guide*).

2. Move the power switch on the power supply faceplate to the standby position.

3. Insert the power cord plug into an external AC power source receptacle.

   NOTE: **Each power supply must be connected to a dedicated AC power feed and a dedicated customer site circuit breaker. We recommend that you use a 15 A (250 VAC) minimum, or as permitted by local code.**

4. Dress the power cord appropriately. Verify that the power cord does not block the air exhaust and access to router components, or drape where people could trip on it.

5. Repeat Step 1 through Step 4 for the remaining power supplies.

Connect Power to an AC Router with High-Capacity Power Supplies

To install a high-capacity AC power supply:

1. Move the AC input switch next to the appliance inlet on the power supply to the off (**O**) position.

2. Using both hands, slide the power supply straight into the chassis until the power supply is fully seated in the chassis slot as shown in Figure 9 on page 18. The power supply faceplate should be flush with any adjacent power supply faceplate or blank installed in the power supply slot.

3. Tighten both captive screws at the bottom of the power supply.

4. Attach the power cord to the power supply.

5. Attach the power cord to the AC power source, and switch on the dedicated customer site circuit breaker. Follow the instructions for your site.

6. Move the AC input switch next to the appliance inlet on the power supply to the on (**I**) position and observe the status LEDs on the power supply faceplate. If the power

supply is correctly installed and functioning normally, the **AC OK** and **DC OK** LEDs light steadily and the **PS FAIL** LED is not lit.

Figure 9: Installing an AC Power Supply
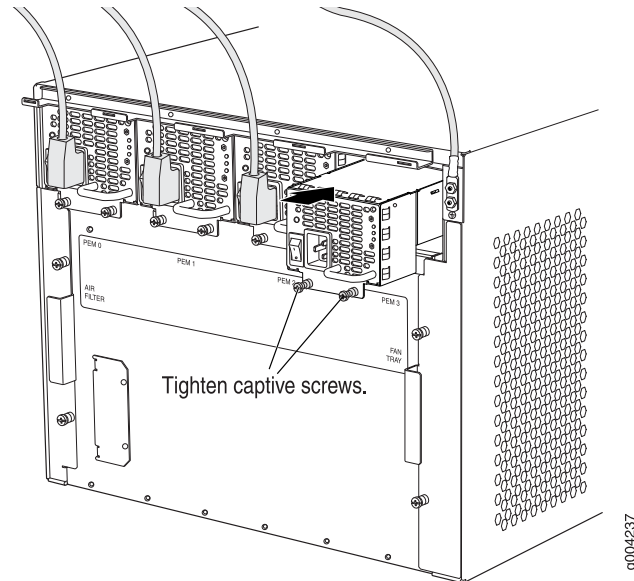
Connect Power to a DC Router with Normal-Capacity Power Supplies

Table 2: MX480 DC Power System Input Voltage

Item	Specification
DC input voltage	Operating range: −40.5 to −72 VDC

1. Ensure that the voltage across the DC power source cable leads is 0 V and that there is no chance that the cable leads might become active during installation.

2. Secure the power cable lugs to the terminal studs, first with the split washer, then with the nut. Apply between 23 lb-in. (2.6 Nm) and 25 lb-in. (2.8 Nm) of torque to each nut. Do not overtighten the nut. (Use a 7/16-in. [11 mm] torque-controlled driver or socket wrench.)

   a. Attach the positive (+) DC source power cable lug to the **RTN** (return) terminal.

   b. Attach the negative (−) DC source power cable lug to the **−48V** (input) terminal.

Figure 10: Connect Power Cables

CAUTION: Ensure that each power cable lug seats flush against the surface of the terminal block as you are tightening the nuts. Ensure that each nut is properly threaded onto the terminal stud. The nut should be able to spin freely with your fingers when it is first placed onto the terminal stud. Applying installation torque to the nut when improperly threaded may result in damage to the terminal stud.

CAUTION: The maximum torque rating of the terminal studs on the DC power supply is 36 lb-in. (4.0 Nm). The terminal studs may be damaged if excessive torque is applied. Use only a torque-controlled driver or socket wrench to tighten nuts on the DC power supply terminal studs.

NOTE: For information about connecting to DC power sources, see the *MX480 3D Universal Edge Router Hardware Guide*.

3. Connect each DC power cable to the appropriate external DC power source.

NOTE: For information about connecting to external DC power sources, see the *MX480 3D Universal Edge Router Hardware Guide*.

4. Switch on the power supply breakers to provide voltage to the DC power source cable leads.

> **i** NOTE: All power supplies need to be turned on at the same time.

Connect Power to a DC Router with High-Capacity Power Supplies

To install a DC power supply:

1. Ensure that the voltage across the DC power source cable leads is 0 V and that there is no chance that the cable leads might become active during installation.

2. Move the power switch on the power supply faceplate to the off (**O**) position.

3. Using both hands, slide the power supply straight into the chassis until the power supply is fully seated in the chassis slot. The power supply faceplate should be flush with any adjacent power supply faceplate or blank installed in the power supply slot.

4. Using a screwdriver, loosen the captive screw holding the metal cover over the input mode switch. Rotate the metal cover away from the input mode switch to expose the switch.

5. Check the setting of the input mode switch. Use a sharp, nonconductive object to slide the switch to the desired position. Set the input mode switch to position 0 for 60-A input and position 1 for 70-A input. This setting is used by the power management software and needs to be set before on the power supply. See Figure 11 on page 20.

Figure 11: DC High-Capacity Power Supply Input Mode Switch
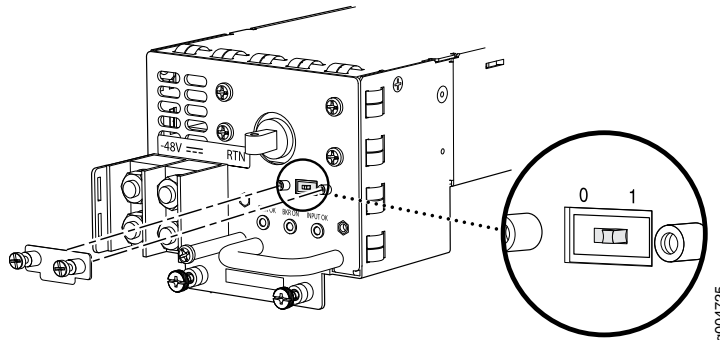
6. Rotate the metal cover over the input mode switch, and use a screwdriver to tighten the captive screw.

7. Tighten the captive screws on the lower edge of the power supply faceplate.

8. Remove the clear plastic cover protecting the terminal studs on the faceplate.

9. Remove the nut and washer from each of the terminal studs.

10. Secure each power cable lug to the terminal studs, first with the flat washer, then with the split washer, and then with the nut (see Figure 12 on page 22). Apply between 23 lb-in. (2.6 Nm) and 25 lb-in. (2.8 Nm) of torque to each nut. Do not overtighten the nut. (Use a 7/16-in. [11 mm] torque-controlled driver or socket wrench.)

    a. Secure the positive (+) DC source power cable lug to the **RTN** (return) terminal.

    b. Secure the negative (−) DC source power cable lug to the **−48V** (input) terminal.

CAUTION: Ensure that each power cable lug seats flush against the surface of the terminal block as you are tightening the nuts. Ensure that each nut is properly threaded onto the terminal stud. The nut should be able to spin freely with your fingers when it is first placed onto the terminal stud. Applying installation torque to the nut when improperly threaded may result in damage to the terminal stud.

CAUTION: The maximum torque rating of the terminal studs on the DC power supply is 36 lb-in. (4.0 Nm). The terminal studs may be damaged if excessive torque is applied. Use only a torque-controlled driver or socket wrench to tighten nuts on the DC power supply terminal studs.

NOTE: The DC power supplies in **PEM0** and **PEM1** must be powered by dedicated power feeds derived from feed A, and the DC power supplies in **PEM2** and **PEM3** must be powered by dedicated power feeds derived from feed B. This configuration provides the commonly deployed A/B feed redundancy for the system.

11. Replace the clear plastic cover over the terminal studs on the faceplate.

12. Route the power cables along the cable restraint toward the left or right corner of the chassis. If needed to hold the power cables in place, thread plastic cable ties, which you must provide, through the openings on the cable restraint.

13. Verify that the power cabling is correct, that the cables are not touching or blocking access to router components, and that they do not drape where people could trip on them.

14. Switch on the dedicated customer site circuit breakers. Follow your site's procedures for safety and ESD.

    Verify that the **INPUT OK** LED on the power supply is lit green.

15. On each of the DC power supplies, turn the power switch to the on (—) position.

    Observe the status LEDs on the power supply faceplate. If the power supply is correctly installed and functioning normally, the **PWR OK**, **BRKR ON**, and **INPUT OK** LEDs light green steadily.

Figure 12: Connecting DC Power to the Router

Protective earthing
(on chassis)

Cable restraints (5)

PEM 0   PEM 1   PEM 2   PEM 3

RTN   48V

FAN
TRAY

Terminal studs

Nut   Split washer   Cable lug

g004222
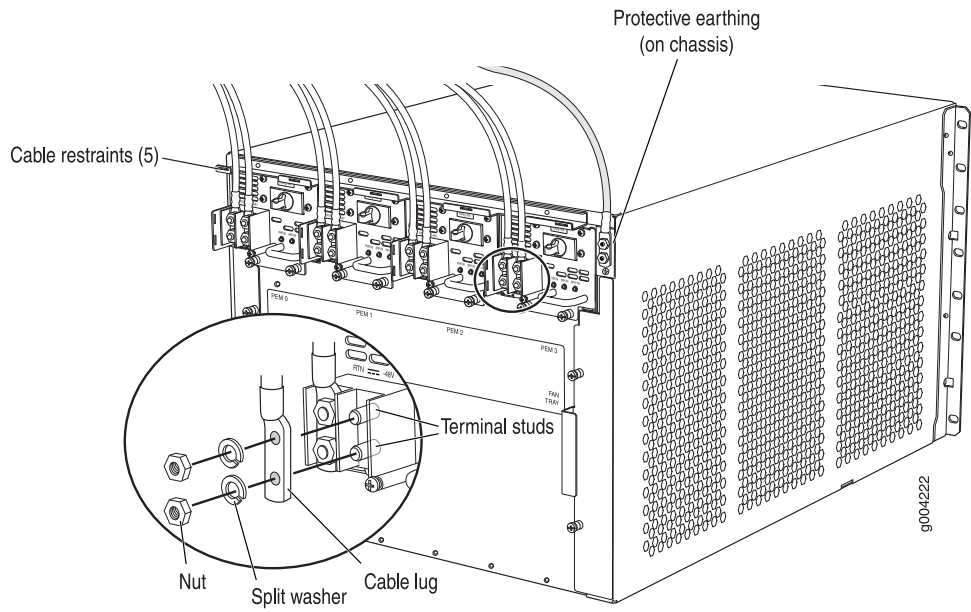
Step 7: Perform Initial Software Configuration

This procedure connects the router to the network but does not enable it to forward traffic. For complete information about configuring the router to forward traffic, including examples, see the Junos OS configuration guides.

To configure the software:

- Enter Configuration Mode on page 23
- Configure User Accounts and Passwords on page 23
- Configure System Attributes on page 24
- Commit the Configuration on page 24

Enter Configuration Mode

1. Log in as the "root" user. There is no password.

2. Start the CLI.

   root# **cli**
   root@>

3. Enter configuration mode.

   cli> **configure**
   [edit]
   root@#

Configure User Accounts and Passwords

For information about using an encrypted password or an SSH public key string (DSA or RSA), see *authentication*.

1. Add a password to the root administration user account. Enter a clear-text password.

   [edit]
   root# **set system root-authentication plain-text-password**
   New password: *password*
   Retype new password: *password*

2. Create a management console user account.

   [edit]
   root# **set system login user** *user-name* **authentication plain-text-password**
   New Password: *password*
   Retype new password: *password*

3. Set the user account class to **super-user**.

   [edit]
   root@# **set system login user** *user-name* **class super-user**

Configure System Attributes

1. Configure the name of the router. If the name includes spaces, enclose the name in quotation marks (" ").

   [edit]
   root@# set system host-name *host-name*

2. Configure the router's domain name.

   [edit]
   root@# set system domain-name *domain-name*

3. Configure the IP address and prefix length for the router's Ethernet interface.

   [edit]
   root@# set interfaces fxp0 unit 0 family inet address *address/prefix-length*

4. Configure the IP address of a backup router, which is used only while the routing protocol is not running.

   [edit]
   root@# set system backup-router *address*

5. Configure the IP address of a DNS server.

   [edit]
   root@# set system name-server *address*

Commit the Configuration

1. Optionally, display the configuration to verify that it is correct.

   ```
   [edit]
   root@# show
   system {
       host-name host-name;
       domain-name domain-name;
       backup-router address;
       root-authentication {
           authentication-method (password | public-key);
       }
       name-server {
           address;
       }
   }
   interfaces {
       fxp0 {
           unit 0 {
               family inet {
                   address address/prefix-length;
               }
           }
       }
   }
   ```

2. Commit the configuration to activate it on the router.

```
[edit]
root@# commit
```

3. (Optional) Configure additional properties by adding the necessary configuration statements. Then commit the changes to activate them on the router.

```
[edit]
root@host# commit
```

4. When you have finished configuring the router, exit configuration mode.

```
[edit]
root@host# exit
root@host>
```

Safety Warnings

WARNING: See installation instructions before connecting the router. This is a summary of safety warnings. For a complete list of warnings for this router, including translations, see the *MX480 3D Universal Edge Router Hardware Guide* at http://www.juniper.net/techpubs/.

WARNING: The intrabuilding port(s) of the router is suitable for connection to intrabuilding or unexposed wiring or cabling only. The intrabuilding port(s) of the router MUST NOT be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intrabuilding interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 4) and require isolation from the exposed OSP cabling. The addition of primary protectors is not sufficient protection to connect these interfaces metallically to OSP wiring.

CAUTION: Before removing or installing components of a router, attach an ESD strap to an ESD point, and place the other end of the strap around your bare wrist. Failure to use an ESD strap could result in damage to the router.

CAUTION: Use an external surge protective device (SPD) at the AC input of the router.

- Only trained and qualified personnel should install or replace the router.

- Perform only the procedures described in this quick start or the *MX480 3D Universal Edge Router Hardware Guide*. Other services should be performed by authorized service personnel only.

- Read the installation instructions before you connect the router to a power source.

- Before installing the router, read the guidelines for site preparation in the *MX480 3D Universal Edge Router Hardware Guide* to make sure that the site meets power, environmental, and clearance requirements for the router.

- For the cooling system to function properly, the airflow around the chassis must be unrestricted. Allow at least 6 in. (15.2 cm) of clearance between side-cooled routers. Allow 2.8 in. (7 cm) between the side of the chassis and any non-heat-producing surface such as a wall.

- When installing the router, do not use a ramp inclined more than 10 degrees.

- Manually installing the router requires two people to lift the chassis. Before lifting the chassis, remove components and attach the installation handle as described in the

MX480 3D Universal Edge Router Hardware Guide. To prevent injury, keep your back straight and lift with your legs, not your back. Do not attempt to lift the chassis by the power supply handles.

- Mount the router at the bottom of the rack if it is the only unit in the rack.

- When mounting the router in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.

- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the router in the rack.

- When removing or installing an electrical component, always place it component-side up on a flat antistatic surface or in an electrostatic bag.

- When you install the router, always make the ground connection first and disconnect it last.

- Wire the DC power supply using the appropriate lugs. When connecting power, the proper wiring sequence is ground to ground, +RTN to +RTN, then −48 V to −48 V. When disconnecting power, the proper wiring sequence is −48 V to −48 V, +RTN to +RTN, then ground to ground. Always connect the ground wire first and disconnect it last.

- Do not work on the system or connect or disconnect cables during electrical storms.

- Before working on equipment that is connected to power lines, remove jewelry, including rings, necklaces, and watches. Metal objects heat up when connected to power and ground and can cause serious burns or become welded to the terminals.

- Failure to observe these safety warnings can result in serious physical injury.

- AC power cable warning (Japan):

WARNING: The attached power cable is only for this product. Do not use the cable for another product.

注意

附属の電源コードセットはこの製品専用です。
他の電気機器には使用しないでください。

g017253

Compliance Statements for NEBS

- The equipment is suitable for installation as part of the Common Bonding Network (CBN).

- The equipment is suitable for installation in locations where the National Electrical Code (NEC) applies.

- The battery return connection is to be treated as an isolated DC return (i.e. DC-I), as defined in GR-1089-CORE.

- For Juniper systems with AC power supplies, an external surge protective device (SPD) must be used at the AC power source.
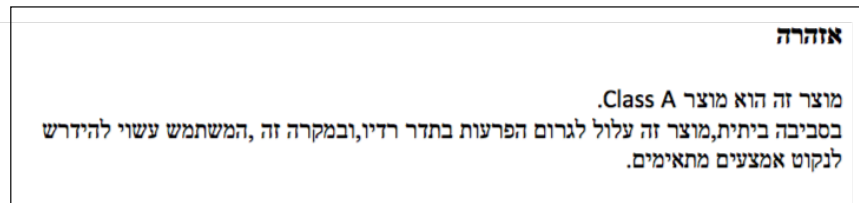
Compliance Statements for EMC Requirements

Canada

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.
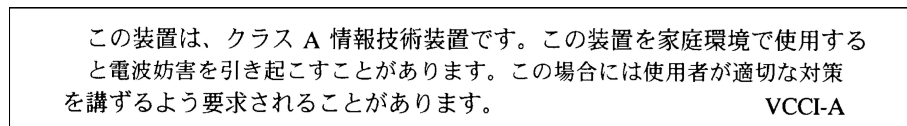
European Community

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Israel

אזהרה

מוצר זה הוא מוצר Class A.
בסביבה ביתית,מוצר זה עלול לגרום הפרעות בתדר רדיו,ובמקרה זה, המשתמש עשוי להידרש לנקוט אמצעים מתאימים.

Translation from Hebrew—Warning: This product is Class A. In residential environments, the product may cause radio interference, and in such a situation, the user may be required to take adequate measures.

Japan

この装置は、クラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。　　　　VCCI-A

Translation from Japanese—This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures. VCCI-A

United States

The hardware equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Junos Documentation and Release Notes

For a list of related Junos documentation, see
http://www.juniper.net/techpubs/software/junos/.

If the information in the latest release notes differs from the information in the
documentation, follow the *Junos Release Notes.*

To obtain the most current version of all Juniper Networks® technical documentation,
see the product documentation page on the Juniper Networks website at
http://www.juniper.net/techpubs/.

Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance
Center (JTAC). If you are a customer with an active J-Care or JNASC support contract,
or are covered under warranty, and need postsales technical support, you can access
our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies,
  review the *JTAC User Guide* located at
  http://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf.

- Product warranties—For product warranty information, visit
  http://www.juniper.net/support/warranty/.

- JTAC Hours of Operation —The JTAC centers have resources available 24 hours a day,
  7 days a week, 365 days a year.

Self-Help Online Tools and Resources

For quick and easy problem resolution, Juniper Networks has designed an online
self-service portal called the Customer Support Center (CSC) that provides you with the
following features:

- Find CSC offerings: http://www.juniper.net/customers/support/

- Find product documentation: http://www.juniper.net/techpubs/

- Find solutions and answer questions using our Knowledge Base: http://kb.juniper.net/

- Download the latest versions of software and review release notes:
  http://www.juniper.net/customers/csc/software/

- Search technical bulletins for relevant hardware and software notifications:
  http://kb.juniper.net/InfoCenter/

- Join and participate in the Juniper Networks Community Forum:
  http://www.juniper.net/company/communities/

- Open a case online in the CSC Case Management tool: http://www.juniper.net/cm/

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: https://tools.juniper.net/SerialNumberEntitlementSearch/

Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at http://www.juniper.net/cm/.

- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, visit us at http://www.juniper.net/support/requesting-support.html

Revision History

January 2015—530-040794. Revision 1. Minor updates.

April 2011—Added high-capacity power information.

August 2010—530-036125. Revision 1. Updated information about MPCs and MICs.

December 2009—530-033337. Revision 1. Updated installation procedures.

July 2009—530-031140. Revision 1. Updated procedure for connecting DC power. Updated information about FPCs and PICs.

April 2008—Removed note regarding automatic shutdown. Minor updates.

September 2007—Minor updates.

September 2007—530-020795. Revision 1. Initial release.